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U. S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE

SOUTHERN FOREST EXPERIMENT STATION
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The Occasional Papers of the Southern Forest Experiment Station present information on current southern forestry problems under investigation at the Station. In some cases, these contributions were first presented as addresses to a limited group of people, and as "occasional papers" they can reach a much wider audience. In other cases, they are summaries of investigations prepared especially to give a report of the progress made in a particular field of research. In any case, the statements herein contained should be considered subject to correction or modification as further data are obtained.

LOUISIANA'S FORESTS AND THE FUTURE^{1/}

By E. L. Demmon, Director,
Southern Forest Experiment Station

Introduction

Louisiana's forests are one of her major natural resources. Since Colonial days, these forests have provided material for building homes, communities, railroads, churches, and schools; they have given employment to thousands of workers; in addition, they have exerted a beneficial influence in conserving rainfall and in protecting soil from excessive erosion. Today these forests are providing many of the materials essential to the war effort of America and her Allies. Under proper management, Louisiana's forests can provide the raw materials needed for all its present forest industries and also for many additional establishments, to the greater security and prosperity of all its people. Compared with other sections of the country, Louisiana offers many advantages for the maintenance of forest industries, as its soil and climate favor rapid tree growth, there are many widely used hardwood and softwood tree species native to the State, markets are nearby, and labor is abundant.

Location and Availability

After more than a century of forest exploitation and clearing of forest land for farms, Louisiana's forest land still occupies more than 16 million acres, or 56 percent of the total land area of the State. Actually, this amounts to more than 13 times the acreage planted to cotton, the principal farm crop. Forests are found in every section of the State with the exception of the tidal marshes along the Gulf of Mexico, and in the prairies of the south-central region. All parts of the State have adequate road, rail, or water transportation facilities. Logging operations are relatively simple; as a result of the construction of highways and improvement in motorized equipment, transportation of logs and lumber by truck has become common and is rapidly increasing in importance.

Area, Type, and Volume

According to the recently completed forest survey conducted by the U. S. Forest Service, the forest area of Louisiana, by forest type and condition, was classified as follows (for 1934-35):

Forest type	Forest condition				Percent
	Old growth	Second growth	Reproduction and clear-cut	Total	
-----Thousand acres-----					
Longleaf	200	830	1,528	2,558	16
Shortleaf-loblolly	249	4,622	203	5,074	31
Upland hardwoods	184	679	72	935	6
Bottom-land hardwoods ..	2,709	4,555	363	7,627	47
Total	3,342	10,686	2,166	16,194	100
Percent	21	66	13	100	

^{1/} Address before the Louisiana Section, American Society of Civil Engineers, at New Orleans, La., Oct. 5, 1942.

The total merchantable wood volume in Louisiana, classed as either saw timber or cordwood on January 1, 1939, was as follows:

Tree species group	Saw timber ^{1/}	Cordwood ^{2/}
	Million feet B.M. (lumber tally)	Thousand cords
Pine	15,109	52,948
Hardwood		
(incl. cypress) ...	26,479	120,301
Total	41,588	173,249

1/ Pine 9 inches and larger, and hardwoods 13 inches and larger, in diameter, at breast height.

2/ All trees 5 inches in diameter and larger, at breast height, whether saw-timber size or under; excludes culls and hardwood tops and limbs.

Of all the States in the Lower South, Louisiana ranks second only to Georgia in total quantity of its saw timber. Louisiana has more hardwood timber than any other State in the Nation, and ranks near the top in softwoods. These forests today are characterized by second-growth timber, much of it below the minimum size for most industrial uses. While these young forests do not have the high quality of the original old-growth stands, they are of sufficiently good quality to supply most market needs.

Current Forest Situation

What is the present situation as regards this valuable Louisiana resource? Although commendable progress has been made in the adoption of good forestry practices by a growing number of progressive timber landowners in the State, the forests as a whole are far from being in a sound condition. A recent survey by the U. S. Forest Service indicated that Louisiana's forests are in general greatly understocked, producing at less than half of their potential capacity. Part of this is due to destructive timber cutting practices of the past, although even today altogether too much timber is being cut without any conscious attempt to perpetuate the forest. This is especially true of the operations of hundreds of small portable mills, the owners of which usually possess no timberland, and who generally cut any tree that will make a 2x4.

In southwest Louisiana there are nearly a million acres of land formerly covered by some of the finest longleaf pine in the South that now are desolate and bare stump fields; they will not bear another timber crop unless planted. Part of the present unsatisfactory forest condition also can be laid to oft-recurring fires, which in the past have destroyed untold millions of forest seedlings and reduced the growth and the quality of the remaining trees. Adequate protection of forests from fire is essential to good forest management, yet today only about one-third of Louisiana's forests is under organized fire protection. With fire protection and good forest management Louisiana can be assured of a maximum of forest products, expanded industries, more jobs for labor, additional revenues, and improved social conditions for the people of the State.

Ownership or Control

According to recent estimates, about 21 percent of the forest land in Louisiana is a part of farms. This represents an average of 23 acres of woodland per farm, comprising about one-third of all the land in farm ownership.

Approximately 4 percent of the State's forest area is in national forests and about $\frac{1}{2}$ of 1 percent is in State forests, parks, and game refuges. About 8 percent is in State ownership as a result of tax delinquency. The balance, or about two-thirds of the total, is in the hands of lumber companies, pulp and paper mills, and other nonfarm private owners.

Value of Forest Products

The cost or value of individual forest products varies greatly with many factors. The Census for 1939 showed that the materials produced by the forest-products industries in Louisiana during that year were valued at close to 100 million dollars, as follows:

<u>Forest-product industry</u>	<u>Value of products</u>
	<u>Thousands of dollars</u>
Sawmills, veneer plants, etc.	33,319
Logging camps	412
Planing mills	6,245
Pulp mills	13,817
Paper mills	25,650
Paper bags	5,744
Paperboard containers	4,538
Cooperage	838
Wood preserving	4,837
Wood naval stores	2,678 (est.)
Gum naval stores	40 (est.)
Total	<u>98,118</u>

General Uses of Forest Products

The most important industries depending upon Louisiana forests for their raw materials are those manufacturing lumber and paper. Other important forest products include fuel wood, veneer, cooperage, poles and piling, fence posts, railroad cross ties, and naval stores (turpentine and rosin). The forests also support an important range livestock industry, provide a home for game animals, and afford opportunities for hunting and other recreational activities. Considerable cut-over timberland is leased for oil development. These multiple uses of forest land provide additional income while the timber crop is growing.

In recent years, Louisiana has led the Nation in the production of hardwood lumber. It leads the South in number of large sawmills. Its 7 pulp mills place it first among the Southern States in consumption of pulpwood, and in the United States as a whole, only Washington and Maine surpass it. It leads the South also in the production of paper and paperboard. The forests of Louisiana support industries employing more labor than any other except farming. According to the 1939 Census, somewhat over one-third of all workers employed in Louisiana manufacturing industries received their income directly from the preparation of forest products for the market. The wages and salaries paid by the forest-products industries in 1939 totaled almost 24 million dollars. Most of the forest industrial plants are located in small towns and in rural areas. Lumber manufacture alone accounted for about 50 percent of forest industry employment. The pulp and paper industry furnished nearly half as much employment as the lumber industry.

The number of primary forest industrial plants in Louisiana in 1940, according to the U. S. Forest Service, was as follows:

Sawmills cutting 25 million bd.ft. or more annually	....	3
" " 15-25 " " " " "	....	11
" " 10-15 " " " " "	....	21
" " 5-10 " " " " "	....	35
" " 1- 5 " " " " "	....	88
" " under 1 " " " " "	....	407
Treating plants (for poles, piles, cross ties, etc.)	....	12
Veneer plants	.....	14
Stave and heading plants (cooperage stock)	.....	27
Pulp mills (using only wood)	.....	7
Small dimension plants	.....	4
Miscellaneous wood-using plants	.....	18
Wood naval stores (destructive steam solvents)	.....	3
Gum naval stores (turpentine stills)	.....	4

Production Trends

According to the U. S. Forest Service, the commodity usage of Louisiana's forests during recent years was as follows:

Commodity	Year			
	1935	1936	1937	1938
	-----Thousands of cords ^{1/} -----			
Lumber	2,912	3,179	3,324	2,278
Cross ties	223	304	435	251
Poles and piles	54	61	98	69
Veneer	103	126	125	105
Cooperage	106	137	173	125
Pulpwood ^{2/}	468	470	398	387
Miscellaneous	16	17	12	14
Fuel wood	1,245	1,248	1,260	1,260
Fence posts	65	63	66	66
Miscellaneous farm use	57	59	59	59
Land clearing	567	311	312	313
Total	5,816	5,975	6,262	4,927

^{1/} From all trees 5 inches d.b.h. and larger, and including bark.

^{2/} By 1941, pulpwood drain had reached 783,000 cords.

Exports and Imports of Lumber

Recent trends of lumber exports and imports for Louisiana are as follows:

Item	1936	1938	1940
	Billion feet, board measure		
Lumber production ^{1/}	1.25	.95	1.08
Lumber imports	.11	.15	.08
Total lumber distributed	1.36	1.10	1.16
Lumber used in Louisiana ^{2/}	.51	.48	.50
Lumber exports			
To other States	.73	.50	.56
To foreign countries	.12	.12	.10

^{1/} Lumber production in Louisiana for other recent years, in billions of feet B.M., is as follows: 1937, 1.36; 1939, 1.04; 1941, 1.17.

^{2/} Per capita lumber consumption in Louisiana exceeds the national average by about 50 percent.

These figures indicate that Louisiana is primarily a lumber exporting State, shipping out more than half the lumber it produces.

Specific Uses and Byproducts

In the past, Louisiana has produced large quantities of lumber and other roughly manufactured wood products for its own uses, such as for building construction, and for shipment to other parts of the country and abroad. The principal secondary wood-using industries in Louisiana as reported for 1940, listed on the basis of the amounts of wood used, were as follows:

Products	Wood used	Percent of total
	Million feet, B.M.	
Flooring	153.1	52
Boxes, baskets, crating	77.7	27
Sash, doors, general millwork ..	33.5	11
Furniture	13.4	5
Dairy and poultry supplies	3.7	1
Woodenware and novelties	3.4	1
Car construction and repair	2.1	3
Caskets and burial boxes	1.7	
Ship and boat building	1.6	
Handles	1.0	
All others	1.7	
Total	292.9	100

The principal species of woods used by these secondary wood-using industries were as follows:

	Volume used, million feet B.M.
Oak	143.0
Pine, southern yellow	40.4
Gum, red	32.6
Cottonwood	19.4
Tupelo	15.6
Cypress	13.2
Pine, ponderosa	11.8
All others	16.9
Total	292.9

To take full advantage of the opportunities offered by its forests, to absorb more of its local labor, and to permit realization locally of the values of further processing, Louisiana is greatly in need of additional remanufacturing plants, such as furniture factories, wood fabricating industries, plywood and plastic plants, etc., which will produce finished goods for local and national consumer markets. The recent expansion of the pulp and paper industry is an excellent example of progress in this direction.

Useful as wood is in the form in which nature provides it, science has shown the way to transformations that add greatly to its importance as a resource of our developing civilization. Although wood conversion products as yet rate far below lumber and other primary products in bulk of wood consumed, they satisfy many needs and promise to become increasingly important. A few of the product

of Louisiana's forests which can be utilized advantageously by manufacturing industries will be discussed in the succeeding paragraphs. Many of these products are of great importance now as they serve war needs.

Pulp and Paper

Cellulose is the most important part of wood from the chemical-industrial standpoint. This remarkable substance is nature's framework and construction material with which are formed the walls of cells that make up the bodies of all plant life. Wood is the most abundant and compact source of this material, more than half of its substance being cellulose fiber. Wood is the principal source of many kinds of paper and pulp products, so essential to our everyday life and to the war effort. Cellulose made from wood is relatively cheap, worth currently about 4 cents per pound, far below the price of cotton, which was formerly the principal source of pure cellulose.

With normal paper consumption increasing in this country and with imports of European pulp and paper shut off because of the war (before 1939, the United States imported more than half of its annual pulp and paper requirements), there may be further opportunities for growth of this industry in Louisiana. This should be guided, however, by careful consideration of the quantity, quality, and availability of pulpwood, the effect on the raw material supplies required by other forest-products industries, and with due regard to factors of long-time investment. It is also contingent upon the maintenance of Louisiana's marked advantages over other sections of the United States and foreign sources in regard to costs of pulpwood and other raw materials, and of the manufacturing operations.

The 7 pulp mills in Louisiana (at Bogalusa, Bastrop (2), Monroe, Hodge, Springhill, and Elizabeth) use southern pine and operate by the sulphate process, the bulk of the pulp going into Kraft wrapping paper, bags, board, containers, and similar products. 1940 production of paper and paperboard in Louisiana amounted to more than 750,000 tons. Also, 2 additional Louisiana plants use pulpwood, along with other raw materials, to produce building materials.

One of the most hopeful aspects for the expansion of the pulp and paper industry in Louisiana and other Southern States lies in the opportunity it offers for the utilization of low-quality forest material not needed by other forest industries. Louisiana has outstanding opportunities to produce pulpwood, along with continuous supplies of sawlogs and other forest products. The vast resources of hardwoods in the Mississippi River Delta section of the State offer excellent possibilities for a pulp and paper industry which can utilize those species. Tests at the U. S. Forest Products Laboratory at Madison, Wis., have indicated the feasibility of using a semichemical process to convert swamp blackgum, sweetgum, and other hardwoods into quality pulps, to be used alone or in mixtures, for newsprint, corrugated board, and a variety of specialty products. In nearby Texas, newsprint has been made successfully since 1940, from southern pine, at the only mill of its kind in the South. In Florida is a mill making high-grade sulphite pulp from southern pine. Most southern pulp mills, however, use the sulphate or Kraft process, and many are now bleaching the sulphate pulp to make the lighter, higher-quality papers.

An outstanding advantage to the Louisiana pulp and paper industry is its nearness to supplies of chemicals used in the manufacturing process. Salt cake or sodium sulphate is the chief chemical raw material used in the sulphate process of digesting wood. From 150 to 450 pounds of salt cake or its equivalent per ton

of finished pulp is needed to maintain the concentration of the cooking liquor, the amount depending on the efficiencies of the washing and recovery processes. The principal supply of salt cake was formerly imported from Germany and other foreign sources but is now produced in Louisiana, from salt and sulphur. Chlorine is the chief bleaching agent for all kinds of pulp, being utilized as such or in combination with lime as a hypochlorite. Oyster shells are occasionally used as a source of lime in the sulphate recovery process; limestone is employed ordinarily. Other chemicals used in the manufacture of paper include rosin and alum (aluminum sulphate) for size, sodium silicate, glue, starch, and casein. Many of these raw materials are available in Louisiana or nearby States, or can be produced locally.

Rayon and Related Products

Synthetic fibers, designated in general as rayon, consist of cellulose chemically modified and spun into silklike filaments, strands, and yarns. Their production has increased markedly during the last few years, and they are particularly important now that imports of raw silk have ceased. Rayon can be produced by several different chemical processes. The raw materials commonly used have been wood pulp and cotton linters (the short lint recovered from the coatings on the cotton seed after the staple has been removed). Wood pulp makes up about 75 percent of the present production of rayon, which requires a highly purified cellulose. This is principally high-grade bleached sulphite pulp made from spruce and hemlock, but other conifers and also hardwoods have been reported as satisfactory. Seventy percent of the country's rayon production comes from the South. By modifying the processes, it is possible to produce cellophane or similar transparent sheeting used for wrapping and packaging.

Cellulose acetate, with a low inflammability, is finding wide use for moving-picture film, and by reason of its plastic properties, can be used to manufacture a great array of molded articles.

A mixture of nitric and sulphuric acids when made to react with cellulose produces nitrocellulose. When this reaction is carried to a high degree of nitration, it forms the high-explosive smokeless powder. When it is nitrated to a lesser degree this type of product may be cast into films such as photographic and motion picture and transparent sheeting in general. When combined with plasticizing agents such as camphor it may be molded into a wide variety of forms. When dissolved in solvents and produced in the form of low-viscosity cellulose nitrate it forms the most important constituent of the modern type of quick-dry lacquers for the coating of automobiles, furniture, and other surfaces requiring a hard, resistant, and durable protective coating.

Purified wood cellulose is being used increasingly for smokeless powder, plastics, lacquers, cellophane, and the like, and promises to play an even more important role in the future.

Mention should be made of lignin, one of the major components of wood and a byproduct of the pulp industry. Lignin compounds form a large proportion of pulpmill waste and contribute to stream pollution. Lignin is a potential source of plastics, not only by itself but also in combination with other materials. As such it offers possibilities for important new industrial developments.

Hardwood Distillation Products

The distillation of wood is an ancient industry, one of the chief products being charcoal. This is the carbonaceous residue left when wood is burned without enough air to insure its reduction to ashes. Chemists have isolated more than 60 individual chemical compounds from the vapors evolved in the distillation of hardwoods, but not all of these are worth purifying or are present in sufficient amount to be valuable. The principal products besides charcoal are methanol (wood alcohol), acetate of lime or acetic acid, and related chemicals. In recent years, synthetic methanol and synthetic acetic acid have seriously narrowed the market for both of these products from wood. However, New Orleans is the largest user of charcoal of any community in the United States, affording a ready outlet for this commodity.

This is one of the few forest industries not concerned with large size or superior quality of the wood it consumes. Only 2 destructive hardwood plants are operating in the South at present, 1 in Arkansas and 1 in Tennessee.

Naval Stores (Turpentine and Rosin)

One of the oldest and most important forest industries in the Lower South is the naval stores industry. This industry, which produces practically all of the rosin and turpentine used in this country and in normal times a large part of that used abroad, is centered in southern Georgia and northern Florida. Nearly two-thirds of the rosin and turpentine produced is derived from the gum of living trees (longleaf and slash pines); the distillation of resinous stumps and heartwood accounts for most of the remainder. Although the decade 1930-40 was a period of relatively poor demand, excessive production, and low prices, there is at present an impending shortage of these materials because of their importance as war materials.

Louisiana is in a transition period so far as the production of gum naval stores is concerned. Past production came from old-growth stands of longleaf pine prior to harvesting operations. These old-growth stands are almost entirely cut out now and the second-growth stands which are replacing them are for the most part not yet of sufficient size to justify turpentering operations. Furthermore, many longleaf stands have been replaced by loblolly and shortleaf pines which do not yield turpentine in commercial quantities. The outlook for an extensive gum naval stores industry in Louisiana in the immediate future is not particularly bright.

There are 3 wood naval stores distillation plants operating in Louisiana (Covington, DeQuincy, New Orleans), producing rosin, turpentine, and pine oil. In 1937, these consumed 121,000 tons of pine distillation wood, of which about four-fifths was stump wood and the remainder top wood. There was at that time over 7 million tons of longleaf pine stumps in south Louisiana available for use by this industry, indicating considerable room for expansion if all the stump wood is to be utilized.

The production of sulphate turpentine and rosin by pulp mills in Louisiana has increased with the expansion of this industry.

Spanish Moss

Harvesting, curing, and marketing Spanish moss (*Tillandsia usneoides*) has been a profitable industry in Louisiana forests for more than half a century.

Spanish moss is a true epiphyte (air plant) and grows in quantities upon cypress, oaks, and other trees in the bottom lands, especially in the swamps in the southern part of the State. It is commercially important because of its tough fibrous tissue, which makes it valuable for upholstery, mattresses, and similar products. The moss is gathered by inhabitants of the swamps as a part-time activity associated with fishing, trapping, subsistence farming, etc. In some cases, moss-gathering rights on tracts of timber are purchased, but most moss is harvested without obtaining definite permission from the landowner. After the moss is gathered and air cured, it is sold to a moss gin for processing and resale to manufacturers. There are currently more than 30 moss gins operating in the State, and the total value of the product is estimated to exceed 1 million dollars annually. The moss reproduces rapidly and there is no evidence of any decrease in the supply.

Comparison of Growth and Drain

From a previous table (page 4) it will be noted that lumber makes up about half the material removed annually from Louisiana's forests. The relation of growth to drain in Louisiana's forests during several recent years was as follows:

	1935	1936	1937	1938
Commodity drain, in M cords	5,816	5,975	6,262	4,927
Net increment in growing stock, in M cords ...	6,746	6,844	6,960	7,163
Relation of drain to growth, in percent	86	87	90	69
Commodity drain, in millions of board feet ...	2,108	2,208	2,333	1,729
Net increment in growing stock, in millions of board feet	1,888	1,902	1,922	1,968
Relation of drain to growth, in percent	112	116	121	88

Although total growth expressed in cords exceeded total drain during the 1935-38 period, the opposite was true of the saw-timber component of the forest (pines 9 inches and larger in diameter, breast height, and hardwoods 13 inches and larger), except in 1938. This overcutting was concentrated on the large, high-quality trees, with a resulting decrease in quality and value of the remaining growing stock. Far more serious, however, was the forest survey finding that Louisiana forests were growing at less than half of their productive capacity.

The war has increased the demands for all forest commodities, and Louisiana's forests now are supplying increased quantities of lumber, boxboards, paper, and other essential war materials, with the result that the current drain on the State's saw-timber supplies is greater than the amount being replaced through growth. This is an entirely justifiable measure in the present crisis and it is fortunate that Louisiana has timber supplies available for the emergency. Nevertheless, it is important that this great natural asset, so essential to our permanent national defense and economic security, be protected adequately and utilized wisely, with the least possible waste. President Roosevelt, in his message to Congress on January 7, 1942, recognized such need when he said: "It is necessary in wartime to conserve natural resources and keep in repair our national plant. We cannot afford waste or destruction, for we must continue to think of the good of future generations of Americans." The contribution of Louisiana's forests in the period of readjustment that will follow the war will be highly important, not only in providing the raw materials needed for a huge reconstruction program at home and abroad, but also in supplying outlets for labor and industry within the State.

Forest Products Trade Possibilities with Latin America

In considering the future of Louisiana forests, an important factor to be taken into account is the opportunity for interchange of forest products with our Latin American neighbors. Future development of inter-American relations will depend in large part on the intelligent utilization of natural resources, one of the most important of which is the forest resource. About 42 percent of the total land area of the 20 Latin American republics is forest land, covering over 2 billion acres and exceeding 3 times the forest area of the United States. Nearly half of this is in Brazil, comprising the most extensive solid body of forest in the world. The major part of Latin American forests are tropical forests, made up of hundreds of species of trees, principally hardwoods. The better known of these are cabinet woods, including mahogany, Spanish cedar, and rosewood, but many others are valuable for construction and other purposes. In spite of the abundance of Latin America's forest resources, forest products thus far have not figured very prominently in the foreign trade of these countries. The principal forest products have been tanning extract, cabinet woods, nuts, carnauba or vegetable wax, rubber, and chicle. Forest products imports into Latin America have had a value about double that of their forest products exports. The largest items of import have been paper and wood pulp; the next largest, lumber. Before the war a considerable proportion of Latin American imports of lumber and pulp and paper came from the Scandinavian countries. These items now are supplied from North America, and much is shipped from the port of New Orleans.

Consumption of wood in Latin America has been excessively low. Whereas the principal forest resource is hardwoods, the principal need is for softwoods for lumber. Domestic consumption of lumber and construction timber in Latin American countries in 1937 ranged from 10 board feet per capita in Brazil and Bolivia to more than 100 board feet per capita in Argentina and Chile, as contrasted with an average of 187 board feet per capita in the United States. Per capita consumption of paper ranged from 5 to 48 pounds in the various Latin American countries in 1937, whereas in the United States it was 245 pounds.

The forest resources of Latin America are not contributing anywhere near what they should to the national economy of the several republics. Contributing to the lack of exploitation of Latin American timber resources are inadequacy of domestic transportation, lack of skilled labor, lack of capital for exploitation, lack of markets, and lack of scientific knowledge of management and utilization of the woods available. The slight use of wood in local construction in the Latin American countries is largely attributable to custom, to low incomes, and to low standards of living. There are many latent possibilities for expansion of domestic consumption as well as of exports and imports. Increased exports of forest products to North America would have a beneficial effect on the foreign trade situation of the Latin American countries, would increase their purchasing power, and would decrease their dependence on trade with Europe. The United States could undoubtedly absorb many Latin American forest products without adverse effect on our own forest industries and forest land development. There is need for closer cooperation between the Americas in developing a two-way trade in forest products that will be mutually profitable, but which will not result in exploitation of our friends and neighbors to the south. Improvement in inter-American trade relations will greatly increase the economic and political solidarity of this hemisphere.

Future Markets

Louisiana's forest resources are sufficiently ample, if managed properly, to continue it as an exporting State, and at the same time furnish adequate quantities of forest products for its own needs. Over 95 percent of the lumber imported into Louisiana comes from adjacent States. Most lumber exports go to northern and eastern States, with substantial amounts going to Latin American countries. The proximity of the lumber markets of the Middle West and the excellent facilities for shipment through New Orleans to the Atlantic seaboard, to Latin America and other world markets, provide Louisiana with many favorable outlets for its forest products.

Planning for the Future

Everyone will agree as to the necessity of producing all the forest raw materials needed for the war effort, even though this results in a temporary overcutting. However, this should be done with a minimum of waste and under methods which will properly use and conserve forest-productive capacity rather than tear it down. If Louisiana's forests are to yield maximum, sustained returns to the landowners and serve the best interests of the public, a number of actions should be taken now, the owners and public each contributing a share. This is the time to lay sound plans for a forestry program to meet the problems and adjustments of the post-war period. Later on will be too late.

One important step is to see that all Louisiana's forest lands receive adequate protection from fire, insects, and disease. This is particularly urgent at this time if critical losses are to be avoided during the war emergency. It will mean that additional public and private funds be made available for such protection purposes.

To obtain a crop of timber by good forest protection and management is of no permanent value if the productivity of the forest is subsequently curtailed or impaired by improper or destructive cutting. Therefore it is essential, in the public interest, that timber harvesting practices on private lands be placed under public control. This could be done by setting up cutting standards that will prevent unnecessary destruction and deterioration of the forest resource, thus assuring that forest lands will be kept reasonably productive and that watershed protection values will not be impaired. Such requirements are relatively simple; in fact, private owners who are now practicing good forestry are doubtless already exceeding any cutting standards that might be adopted. What happens to Louisiana's forests is a matter of concern to all the country, inasmuch as Louisiana sends more lumber and other forest products out of the State than it uses locally. It is a public responsibility to see that necessary actions are taken to prevent further destruction of this vital natural resource.

Other measures needed to improve the present forestry situation in Louisiana include:

1. Acquisition and management by communities, parishes, the State, or the Federal Government of forest lands of vital public interest, such as important watersheds or devastated areas, and lands which private owners cannot reasonably be expected to manage properly. The great bulk of the forestry job, however, still will remain with the private owners.

2. Much more needs to be done in the way of forest extension, education, demonstration, and technical guidance relative to proper forest management and marketing of timber products.

3. Much additional information is needed to provide the scientific basis for good forestry practice and this can best be obtained through forest research; due to insufficient funds, present forest research efforts are short of actual needs.

4. Obstacles to stabilized ownership necessary for long-time forest management should be removed or ameliorated—among those are discriminatory taxes, unfair freight rates, and unfavorable credit and insurance facilities.

Conclusion

Louisiana's forests, which occupy almost 6 out of every 10 acres of its land area, are of inestimable value in the war effort. They also can and should play a major role in the post-war future of this great commonwealth. Forests differ from most other natural resources in that they can be fully used, and, at the same time, be made to increase in volume and value. Forestry progress in Louisiana is being implemented by the work of the State forestry organization, the State extension forester, the forestry school at Louisiana State University, and by the research and administrative groups of the U. S. Forest Service. All of these agencies are working towards obtaining good forestry practices on all the forest land in the State.

A fully developed forestry program for the State will bring increased forest-products industries, more jobs for labor, additional revenues, and improved social conditions. The public agencies and the landowners share the responsibility of taking the necessary action to assure that this great natural resource is utilized wisely and contributes fully to the greatest good of all our people.